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ABSTRACT

A variety of explanations for the decline of Scholastic Aptitude Test (SAT) scores over the past several years are examined. Studies undertaken by the College Board indicate that the SAT score decline has not eroded the test's validity, that the decline is not an artificial by-product of score-equating techniques, and that it is not to any appreciable extent an artificial by-product of changing test-taking patterns. Further investigation has shown that even the first decline of SAT score averages can not be explained by either an expansion in the population of immediate college entrants or an expansion in the population of SAT-takers. In fact, the increased overall population does not seem to have become less able, and the expansion in the smaller SAT-taking population seems to have paralleled expansion in the population of immediate college entrants since 1964. The data are insufficient to either confirm or deny that a change in the socioeconomic balance of the test takers is a possible cause. The evidence does not indicate that there has been a general decline in reasoning ability among the student population. Tables present score data for the high school classes of 1956 through 1974, and the implications for college administrative planning are briefly discussed. (Author/HV)

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The SAT Score Decline and Its Implications for College Admissions

A review of SAT score trends and the contexts in which they have occurred together with suggestions about how the implications for colleges can be foreseen in time to cope with them

Presented at the 1975 Western Regional Meeting
of the College Entrance Examination Board

Sam A. McCandless
January, 1975

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Scholastic Aptitude Test (SAT) scores began to decline 10 years ago, and in recent years the annual declines have been larger. As larger declines have accumulated, they have increasingly raised or reinforced concerns about the sources and implications of the declines. Progressively lower scores among students from successive high school classes have concerned some educators for some time. More recently, the decline in SAT scores has excited considerable comment among wider audiences. As a result, concerns that the SAT score decline be knowledgeably interpreted have grown as concerns about the decline have spread. It therefore seems useful to review what is known about SAT score trends and the contexts in which they have occurred.

validity not affected

In any discussion of the SAT score decline, it is useful to recall that the SAT is a college-entrance test, intended and designed to help forecast the likely academic performance in college of students who take the test while in high school. Any remarkable change in SAT scores, e.g., the recent marked declines, naturally raises the question of whether the test's most essential characteristic--its validity--has been somehow affected. It apparently has not.

The validity of the SAT is regularly measured in the Validity Study Service, through which the Board provides colleges with analyses of how SAT scores and other information available prior to college entry are related to collegiate academic performance or other criteria available after entry. When the analysis is complete, the college has formulas that can be used to advise students, for example, how much

better or worse they are likely to do in, say, education than liberal arts. Incidental to the production of such forecasting aids, the Validity Service measures the strength of the relationship between SAT scores and whatever measures of collegiate experience seem most appropriate to the college. Normally, the freshman-year grade-point average is among these criteria.

A survey of the records of the Validity Study Service found 31 colleges for which comparable studies had been provided both for 1971 or 1972 freshmen and for three other freshman classes since 1963, when the SAT score decline first appeared. A comparison of these studies found no evidence of a systematic increase or decrease in the validity of the SAT. Its scores had slightly higher validities in the more recent studies, but not enough higher for us to be confident that the increase did not result from sampling error.

Three of the colleges' studies showed changes in the scores' validities that could not be attributed confidently to normal fluctuation. In one of these, there was a consistent downward trend in the validity of both SAT-Verbal and SAT-Mathematical scores; in one, the validities fluctuated but tended to show increased values; and in one, a consistent upward trend for each score's validity was observed.

For 17 of the colleges, comparable studies had been provided both for 1967 freshmen and for 1972 freshmen. These are of particular interest because most of the SAT score decline has been registered since 1967. For these 17, the validity coefficient for the two SAT scores combined ranged from a low of 0.149 to a high of 0.602 in the 1967 studies and from a low of 0.226 to a high of 0.632 in the 1972 studies. At the median, this coefficient for the colleges studying only 1967 and

1972 freshmen was 0.421 for both classes. The same statistic for the colleges studying 1967, 1969 and 1972 freshmen was 0.372, 0.376 and 0.404, respectively, for these classes. These increases in the validity coefficient may very well, however, derive from sampling error rather than from an increase in the validity of the SAT.

This evidence that the validity of the SAT has not been somehow affected by the score decline is drawn, of course, from records that happen to be available for analysis after the fact and not from sets of data collected with stalking the SAT score decline in mind. But this is characteristic of the data that seem to bear on the score decline. All such data are fortuitously available and not exactly what we would like.

The continued validity of the SAT is consistent with a score decline that is wholly artificial. The scores would have the same validity if, for example, 12 points had been subtracted from each score. And there would seem to be two potential sources of an artificial decline in scores--a "drift" in the scores' scale and shifting test-taking patterns--both of which can now be rejected.

a stable score scale

An artificial score decline could be caused by the existence of some systematically depressing factor below the surface of the techniques used to ensure that a given SAT score represents the same level of ability regardless of the date on which it was earned. Conceivably, that is, the score scale itself could have "drifted" so that over the years a 480, say, has become a 425 without anyone's noticing.

This seemed most unlikely, because the techniques used to keep the score scale stable have been developed with such care and maintained with such rigor. Confirming

that such procedures were sound seemed wise, however, and a study of them was begun in the spring of 1973. The necessary data were collected at the December 1973 administration of the SAT, when sections of questions administered earlier in the decline were added to the sections generating the scores that students received from the December 1973 form.

Analyses of these data showed beyond any doubt that the score decline has not been caused by some essentially technical factor. As a result, we are assured that the great pains taken in constructing successive forms of the SAT, in scoring students' answer sheets, and in equating forms for minor differences in difficulty before scores are reported have produced the intended results. In short, the scores reported have been the scores that the students earned.

more junior-year scores

It was mentioned above that SAT scores would remain equally valid if 12 points were subtracted from each score. This would result, of course, in a drop of 12 points in the average of all scores. This example is of some interest because it is about what we would expect if all the students who take the SAT began to take it as juniors and not repeat it as seniors.

The students who do so probably forego about 15 points, on the average, in score gain. That is, those who do repeat the test earn as seniors scores that average about 15 points higher than their junior-year scores. Presumably, those who take the SAT as juniors but do not repeat forego score gains of roughly the same magnitude. Presently, about a quarter of the students who take the SAT do just that: take the SAT only as juniors. If the other three quarters did too, abruptly, then the 15 points they "lost" would, after they were spread over all

students (including the one-quarter who already had junior-year only scores) depress the average for the full group about 12 points.

This would not be mentioned if it had not been happening, but happening much more gradually than in the example above. Since about 1962, the percentage of the students who take the SAT as juniors but do not repeat the test as seniors has been increasing. About 8 percent of the 1962 and 1964 graduates took the SAT only as juniors and about 29 percent of the 1974 graduates took it only as juniors. The increase in this percentage has not always been steady, but it has been constant at about two percent in very recent years.

Knowing this, the extent to which the SAT score decline is artificially accentuated by an increase in junior-year-only scores can be estimated. The effect is estimated below for score averages as they are provided for schools and colleges through the annual Summary Reports of the College Board's Admissions Testing Program (ATP). National data are used for convenience and because of their general interest. Consider the graduates of 1972 and 1973 who took the SAT with the results shown below.

Table 1. SAT Score Averages for 1972 and 1973 Graduates

	Verbal	Mathematical
1972	453	484
1973	445	481
Declines	8	3

These data are extracted from College-Bound Seniors, 1971-72 and College-Bound Seniors, 1972-73, the annual reports which present the national ATP Summary Reports for the 1972 and 1973 graduates who took the SAT.

There were approximately one million of each. But 25 percent of the 1972 graduates took the SAT only as juniors, while 27 percent of the 1973 graduates rested on their junior-year scores. What matters here is the difference, that an additional two percent or 20,000 of the 1973 graduates chose to forego whatever score gain they would have enjoyed if they had repeated the SAT as seniors. To what extent did this increase in the percentage of junior-year scores contribute to the marked declines in the score averages shown above?

The score gain enjoyed by repeaters is currently estimated to average about 15 points. If 20,000 of the 1973 graduates were "given" that much gain, there would be another 300,000 points (15 times 20,000) to be spread over the full one million in adjusting the averages. Those averages would therefore be less than a third of a point higher.

A different assumption could be made about the score gain that non-repeating juniors would enjoy if they re-tested as seniors. But no reasonable assumption would make much difference in the score averages for all students as long as the percentage of junior-year scores not replaced by senior-year scores continues to increase at anything like its current gradual rate of two percent per year. So while score averages as kept for ATP Summary Reports are artifically depressed by increasing fractions of junior-year scores being included, the depression is trivial in magnitude.

As we find that the SAT score decline has not eroded the test's validity, that the decline is not an artificial by-product of score-equating techniques, and that it similarly is not, to any appreciable extent, an artificial by-product of changing test-taking patterns, the decline increasingly looks "real" to us. Consequently, the longer the decline

extends, the more we will have to worry about it. As will be seen below, the scores most recently earned on the SAT are such that we cannot tell whether the decline is over.

the most recent scores

Table 2. SAT Score Averages, by Sex, for 1972, 1973, and 1974 graduates

	Verbal			Mathematical		
	Male	Female	Total	Male	Female	Total
1972	454	452	453	505	461	484
1973	446	443	445	502	460	481
1974	447	442	444	501	459	480

These data are re-printed from College-Bound Seniors, 1973-74, the most recent annual report and the third of a series of three begun when the Student Descriptive Questionnaire was added to the Board's college-entrance tests in 1971-72.

From these data it seems clear that the SAT score decline "was not sustained," as the publication puts it, among the 1974 graduates. This neutral language was chosen to avoid implying that the score decline is over. From other data already accumulated for the 1975 graduates and being held for next year's ATP Summary Reports, it also seems that the SAT score decline may be only temporarily submerged.

More than half of the 1975 graduates who are going to take the SAT took it in 1973-74 as juniors. And those who did, earned lower scores than equally numerous 1974 graduates who took the SAT as juniors, as can be seen in Table 3. The "deficits" that the 1975 graduates had as they began their senior year amount to 8 points in the case of the SAT-Verbal average and 2 points in the case of the SAT-Mathematical average. These deficits can be made up during the current

Table 3. Scholastic Aptitude Test (SAT) Score Averages
By Grade Level for the Testing Years 1965-66 through 1973-74

	Verbal		Mathematical	
	Juniors	Seniors	Juniors	Seniors
Testing Year				
1965-66	477	467	505	490
1966-67	476	463	506	490
1967-68	470	463	504	490
1968-69	467	460	495	490
1969-70	465	458	495	486
1970-71	461	459	494	484
1971-72	455	446	491	477
1972-73	449	439	489	477
1973-74	441	440	487	474

testing year. We should not assume that they will not be something very like that happened in the case of the 1974 graduates.

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insert Table 3 about here)

Those of the 1974 graduates who took the SAT as juniors had similar "deficits" of 6 and 2 points in SAT-V and SAT-M, respectively, on entering their senior year. And those who did not repeat the SAT as seniors ended the year with markedly lower scores than the 1973 graduates who similarly took the SAT only as juniors. Sharp declines among these students were almost made up for, however, by the senior-year scores earned by their classmates. The 1974 graduates who took the SAT only as seniors earned slightly higher scores than the 1973 graduates who took the test only in their senior year. And the 1974 graduates who repeated the SAT enjoyed score gains larger than those experienced by the 1973 graduates who repeated the SAT.

There is, of course, no way to tell now whether the 1975 graduates who repeat the SAT as seniors this year will enjoy score gains even larger than those seen last year. Similarly, the 1975 graduates who take the SAT only as seniors may or may not further extend the score increases seen among the 1974 graduates who took the SAT only as seniors. Certainly the safest thing to say is simply that the recent trend toward markedly lower SAT scores was not sustained among the 1974 graduates.

Even if the declines do not resume among the 1975 graduates, we still have a puzzle on our hands in the declines seen to date. Before we examine those in any detail, we ought to ask ourselves whether declines of several points in the averages of scores that range for 600 points, from a low of 200 to a high of 800, are large enough to worry about. This question is addressed next.

score averages and score distributions

In discussions about the SAT score decline, impatient or simply curious participants sometimes interrupt the worrying to ask whether declines of several points--or even twenty or thirty points over several years--are large enough to be of any importance. An immediate feel for the answer can be gotten from the data in Table 4, which includes the distributions of the SAT-Verbal scores earned by graduates of 1972 and 1973. Here we see the differences reflected by a decline of eight points in the score average. We see, that is, that a shift of several points in the average or "mean" of the scores reflects substantial changes in the number of scores in score ranges near the "extremes" of the distribution.

This particular eight-point decline in the score average reflects, for example, a reduction in the number of students at the very top of the score scale, above 750, from about 2,800 to about 1,800, while the number at or above 550 but below 600 is reduced from about 102,000 to about 87,000. From this perspective, progressive declines of only a few points in the score averages do indeed seem significant.

Whether a decline of a few points in a score average is statistically significant is a very different question. This is a question that we ask about the score averages for samples of larger populations when we

want to know how likely it is that the difference between the samples' averages reflects simply a difference in the samples rather than a difference in the larger populations sampled. This question can be answered very precisely if the samples of the larger populations are deliberately drawn. But the large populations of students taking the SAT are not deliberately drawn and are not representative of any larger student population such as all college-going students or all high school graduates.

If, then, we ask how likely it is that a score decline among the large but unrepresentative sample of the graduates taking the test reflects a decline among, say, all graduates, then we are asking, essentially: how unrepresentative is the SAT population? But if we knew that, then we would not need to ask the question. And about all we can say without running the risk of mis-leading ourselves is that the more score averages decline among the large and unrepresentative sample of students taking the test, the less likely it is that score averages would not have declined for all students, if they all took the test. This could be detailed, but it is more profitable to examine the score decline we know has occurred, which is treated next, and the context in which it has occurred, which is treated subsequently.

trends in SAT score averages, 1956-57 through 1973-74

Although ATP Summary Reports are not available until the graduates of 1972 are reached, rough estimates of the SAT score averages that would have appeared in such reports can be derived from data kept continuously for students in high school classes graduating since 1966. This is done by categorizing by grade level the data available for testing years, re-combining that data so that the scores earned by juniors in

Table 4. Scholastic Aptitude Test(SAT)-Verbal Score Distributions, for Graduates of 1972 and 1973 Taking the SAT

Score Range	1972	1973	Increase(+) or Decrease(-)
750-800	2,817	1,793	- 1,024
700-740	14,743	10,744	- 3,999
650-690	36,234	27,242	- 8,992
600-640	62,836	58,477	- 4,359
550-590	101,572	86,810	-14,762
500-540	138,183	134,485	- 3,698
450-490	160,161	169,790	+ 9,629
400-440	173,957	172,090	- 1,867
350-390	155,029	160,465	+ 5,436
300-340	106,204	109,045	+ 2,841
250-290	52,770	63,169	+10,399
200-240	18,314	20,743	+ 2,429
Total	1,022,820	1,014,853	- 7,967
Average	453	445	- 8
Std. Dev.	111	108	- 3

one year are accumulated with the scores earned by seniors the next year, and, finally, removing the junior-year scores for identified "repeaters."

For reasons explained in notes in Table 5, the estimates given there are sometimes a point or two different from the averages that would have been produced for ATP Summary Reports. Because they are, the score averages were estimated even for the more recent graduating classes (for which we have ATP Summary Reports) in order to avoid a discontinuity in the data between the class graduating from high school in 1971 and the class of 1972.

In the data for classes graduating prior to 1967, the scores earned by juniors are inextricably mixed with the scores earned by seniors. In these earlier years, we have only the score averages for successive testing years. Those are given in Table 6. Comparing these testing-year averages with the high-school-class averages in Table 5a, we see that the averages for a given testing year are in fact rarely very different from the estimates of the averages for the class graduating at the end of the year. Consequently, we may regard the averages for the testing years 1956-57 through 1965-66 as very rough estimates of the averages we do not have for the classes graduating from 1957 through 1966.

Doing so does not seem likely to seriously mislead us, and judging from the data in Table 6, the SAT score decline set in among the graduates of 1964. The declines seen in SAT score averages between 1963 and 1967 can be roughly estimated at about 11 points in the case of the Verbal average and about 7 points in the case of the Mathematical average.

Table 5a

Estimates of
Scholastic Aptitude Test (SAT) Score Averages
for SAT-Taking Students from High School Graduating Classes, 1967-1974

High School Class	Verbal		Number (in 1,000's)	Mathematical	
	Average	S.D.		Average	S.D.
1967	464	109	1,014	491	111
1968	464	110	1,032	491	115
1969	462	110	1,123	492	113
1970	459	111	1,153	487	114
1971	454	111	1,133	487	113
1972	451	110	1,103	482	115
1973	444	108	1,080	481	113
1974	443	109	1,038	479	116

Table 5b

Estimates of
Scholastic Aptitude Test (SAT) Score Averages
for SAT-Taking Males from High School Graduating Classes, 1967-1974

High School Class	Verbal		Number	Mathematical	
	Average	S.D.	(in 1,000's)	Average	S.D.
1967	462	109	551	512	113
1968	464	111	559	510	117
1969	458	110	601	512	116
1970	458	112	613	508	117
1971	453	111	595	506	117
1972	451	111	570	502	118
1973	445	109	549	501	116
1974	445	110	520	499	119

Table 5c

Estimates of
Scholastic Aptitude Test (SAT) Score Averages
for SAT-Taking Females from High School Graduating Classes, 1967-1974

High School Class	Verbal		Number	Mathematical	
	Average	S.D.	(in 1,000's)	Average	S.D.
1967	468	108	463	466	103
1968	466	109	473	469	106
1969	465	109	522	469	105
1970	461	110	540	464	106
1971	456	109	538	466	105
1972	450	110	534	460	107
1973	443	107	525	460	105
1974	441	108	514	458	108

Table 6: Scholastic Aptitude Test (SAT) Score Averages
1956-57 through 1973-74

Testing Year	Verbal	Mathematical
1956-57	473	496
1957-58	472	496
1958-59	475	498
1959-60	477	498
1960-61	474	495
1961-62	473	498
1962-63	478	502
1963-64	475	498
1964-65	473	496
1965-66	471	496
1966-67	467	495
1967-68	466	494
1968-69	462	491
1969-70	460	488
1970-71	454	487
1971-72	450	482
1972-73	443	481
1973-74	440	478

The declines in SAT score averages for the students graduating in and after 1967 can be more reliably estimated and are seen in Table 5a to amount by 1974 to 21 points in the case of the Verbal average and to 12 points in the case of the Mathematical average. In this table we see that the graduates of 1974 who took the SAT were not the first among whom the declines in score averages were "not sustained." Such declines as there were before 1968 apparently were not sustained among the graduates of that year, and there also was no decline in the Mathematical average for the graduates of 1969. This together with the non-decline among the graduates of 1974 means that the recent declines in score averages occurred for the most part among the graduates of 1969 through 1973. The general impression is that a downward trend in score averages paused or was not sustained in 1968 and then resumed, becoming more acute before again not being sustained among the graduates of 1974. What is perhaps most interesting in Table 5a is the persistence following 1967 of a decline that is larger for the Verbal than for the Mathematical average.

From the data given separately by sex in Tables 5b and 5c, we see that since 1967, at least, there has been a larger decline in the Verbal average for students of each sex. But also, and curiously, that while the Mathematical average has declined slightly more among the men taking the SAT, the Verbal average has declined more among the women who took the test. As a result, among the tested population the Mathematical average for men no longer exceeds that average for women by as large an amount as previously and the Verbal average for women no longer exceeds the Verbal average for men, which is now higher.

In general, the SAT score averages seen both in Table 5 and Table 6 indicate an early period, 1956 through 1963, during which the averages fluctuated but were effectively stable, followed by a middle period, 1964 through 1967 when declines in SAT score averages larger in the case of the Verbal average appeared, and, following a pause in 1968, a recent period during which the declines became more acute, differentially for the two sexes, until that recent trend toward markedly lower averages was not sustained among the graduates of 1974.

These are the SAT score trends to which we will return from time to time as concurrent trends in SAT-taking, high school graduation, and immediate college entry are surveyed in an attempt to relate changes in the population of students taking the SAT over the years to changes among the larger populations of all 18-year-olds, all high school graduates, and all immediate college entrants.

rates of high school graduation, college-going, and SAT-taking 1959-1974

The College Board is frequently asked for the data in Table 7 by those interested in using it to test or confirm an "expanding-population hypothesis", a theory that would explain the decline in SAT scores as a by-product of an increase in college-going, an increase commonly thought to have resulted in a college-going population academically less able on the average and as a result, in a less able SAT-taking population.

In Figure 1, estimates of the number of graduates, immediate college entrants and SAT-takers are graphed as percentages of the number of 18-year-olds. The number of 18-year olds is a rather artificial base for the rate of immediate college entry or SAT-taking, but when those rates are calculated with high school graduates as the base, some

Figure 1a

Estimates of the Rate of High School Graduation, Immediate College Entry, and SAT-Taking Among Both Sexes, 1959-1974

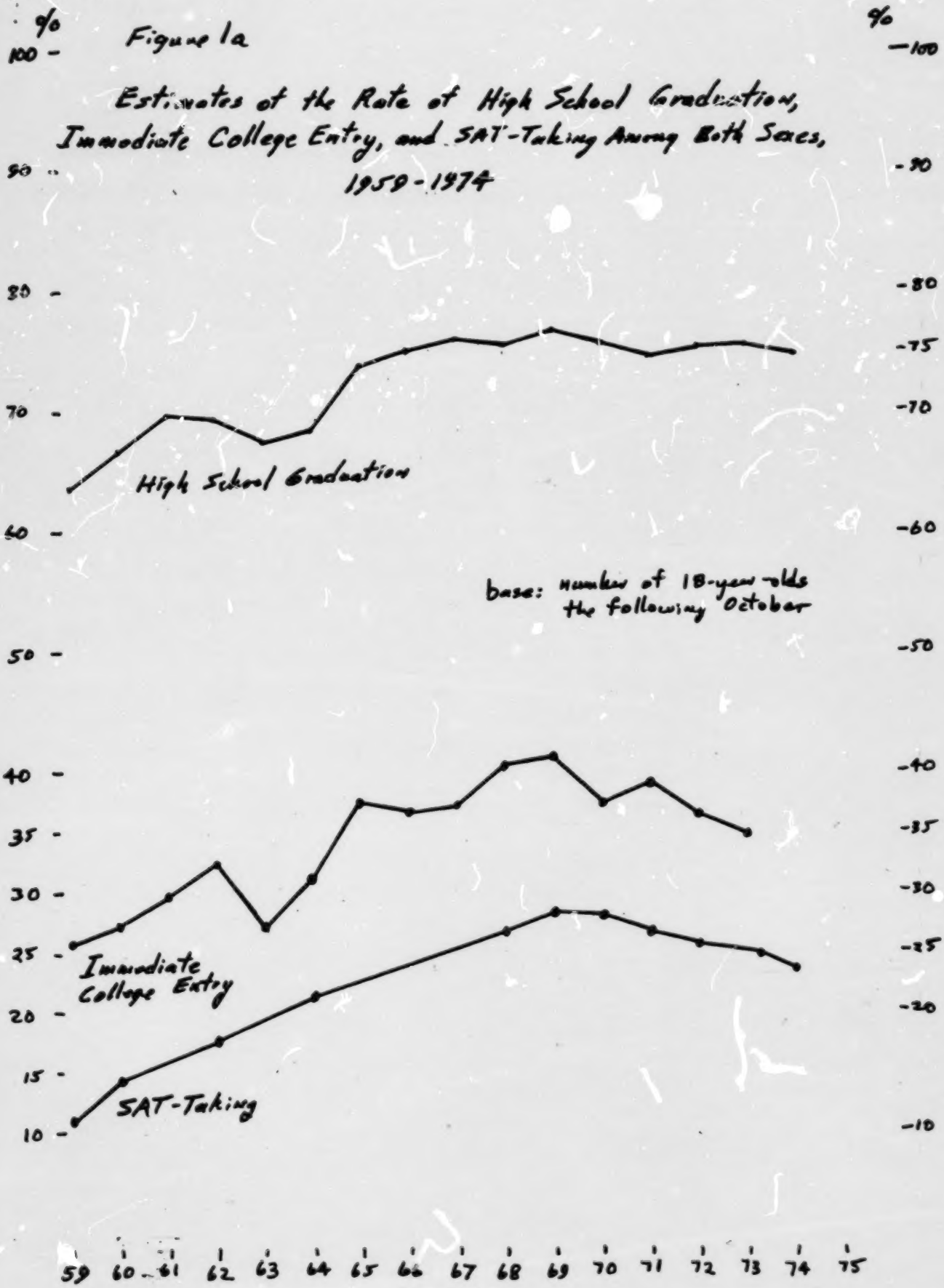

Figure 1b

Estimates of the Rates of High School Graduation, Immediate College Entry, and SAT-Taking Among Males, 1959-1974

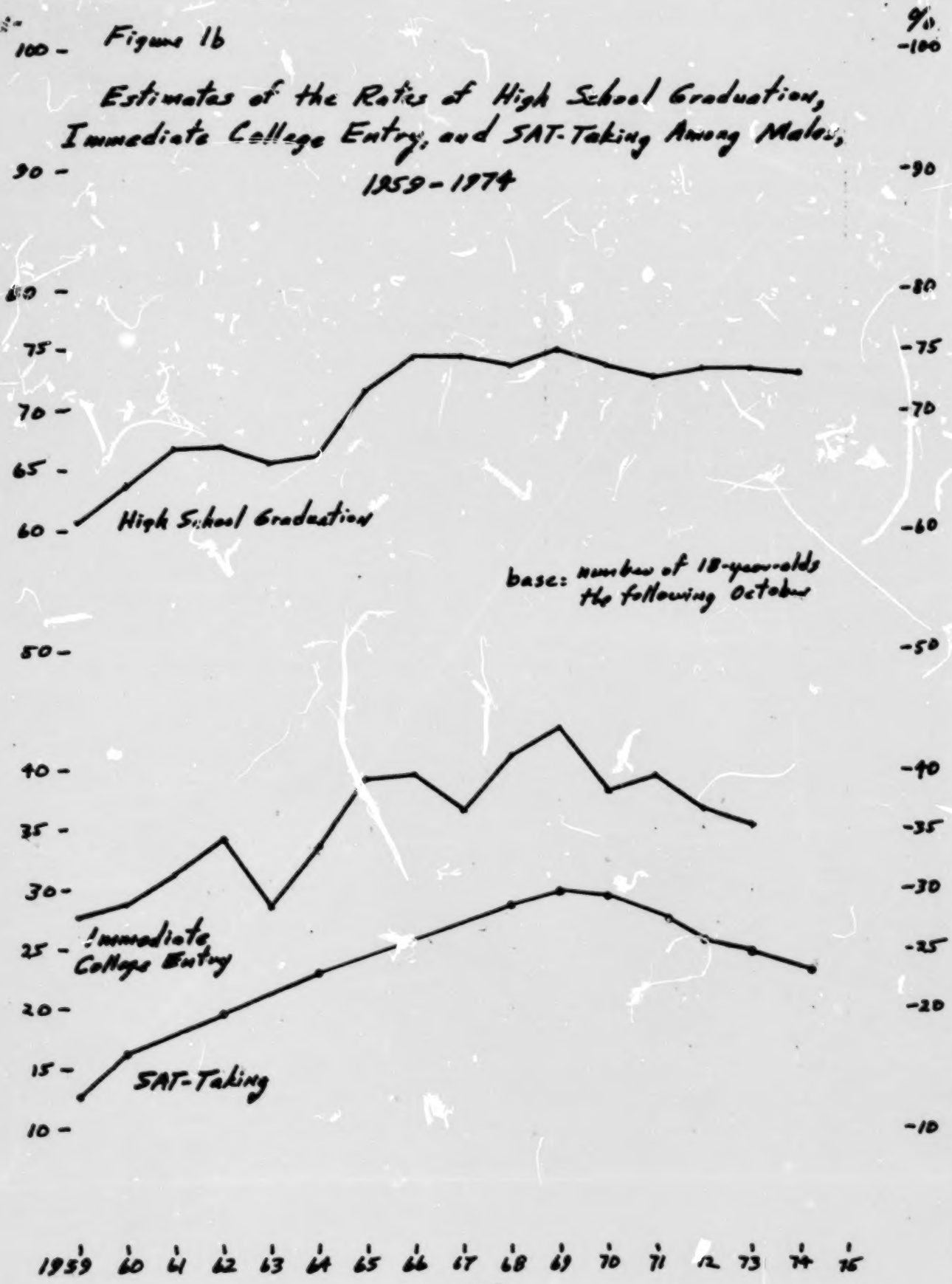

Table 7a:

Estimates of the Rate of High School Graduation, Immediate College Entry, and SAT-Taking Among Both Sexes, 1959-1974

High School Class	number of 18-year-olds the next October (in 1,000's)	High School Graduates		Immediate College Entrants			SAT-Takers			
		number (in 1,000's)	% (18)	number (in 1,000's)	% (18)	% (Gr)	number (in 1,000's)	% (18)	% (GC)	% (ICE)
1959	2,574	1,639	63.7	665	25.8	40.6	282	11.0	17.2	42.4
1960	2,789	1,864	66.8	758	27.2	40.7	397	14.2	21.3	52.4
1961	2,832	1,971	69.6	847	29.9	43.0	n/a	n/a	n/a	n/a
1962	2,776	1,925	69.3	900	32.4	46.8	492	17.7	25.6	54.7
1963	2,895	1,950	67.4	784	27.1	40.2	n/a	n/a	n/a	n/a
1964	3,348	2,290	68.4	1,037	31.0	45.3	707	21.1	30.9	68.2
1965	3,605	2,665	73.9	1,354	37.6	50.8	n/a	n/a	n/a	n/a
1966	3,563	2,672	75.0	1,309	36.7	49.0	n/a	n/a	n/a	n/a
1967	3,524	2,679	76.0	1,311	37.2	48.9	n/a	n/a	n/a	n/a
1968	3,578	2,702	75.5	1,444	40.4	53.4	964	26.9	35.7	66.8
1969	3,682	2,829	76.8	1,516	41.2	53.6	1,042	28.3	36.8	68.7
1970	3,826	2,896	75.7	1,427	37.3	49.3	1,070	28.0	36.9	75.0
1971	3,932	2,943	74.8	1,535	39.0	52.2	1,040	26.4	35.3	67.8
1972	4,011	3,015	75.2	1,457	36.3	48.3	1,023	25.5	33.9	70.2
1973	4,083	3,077	75.4	1,425	34.9	46.3	1,015	24.9	33.0	71.2
1974	4,178	3,130	74.9	n/a	n/a	n/a	985	23.6	31.5	n/a

Figure 1c

Estimates of the Rates of High School Graduation, Immediate College Entry, and SAT-Taking Among Females, 1959 - 1974

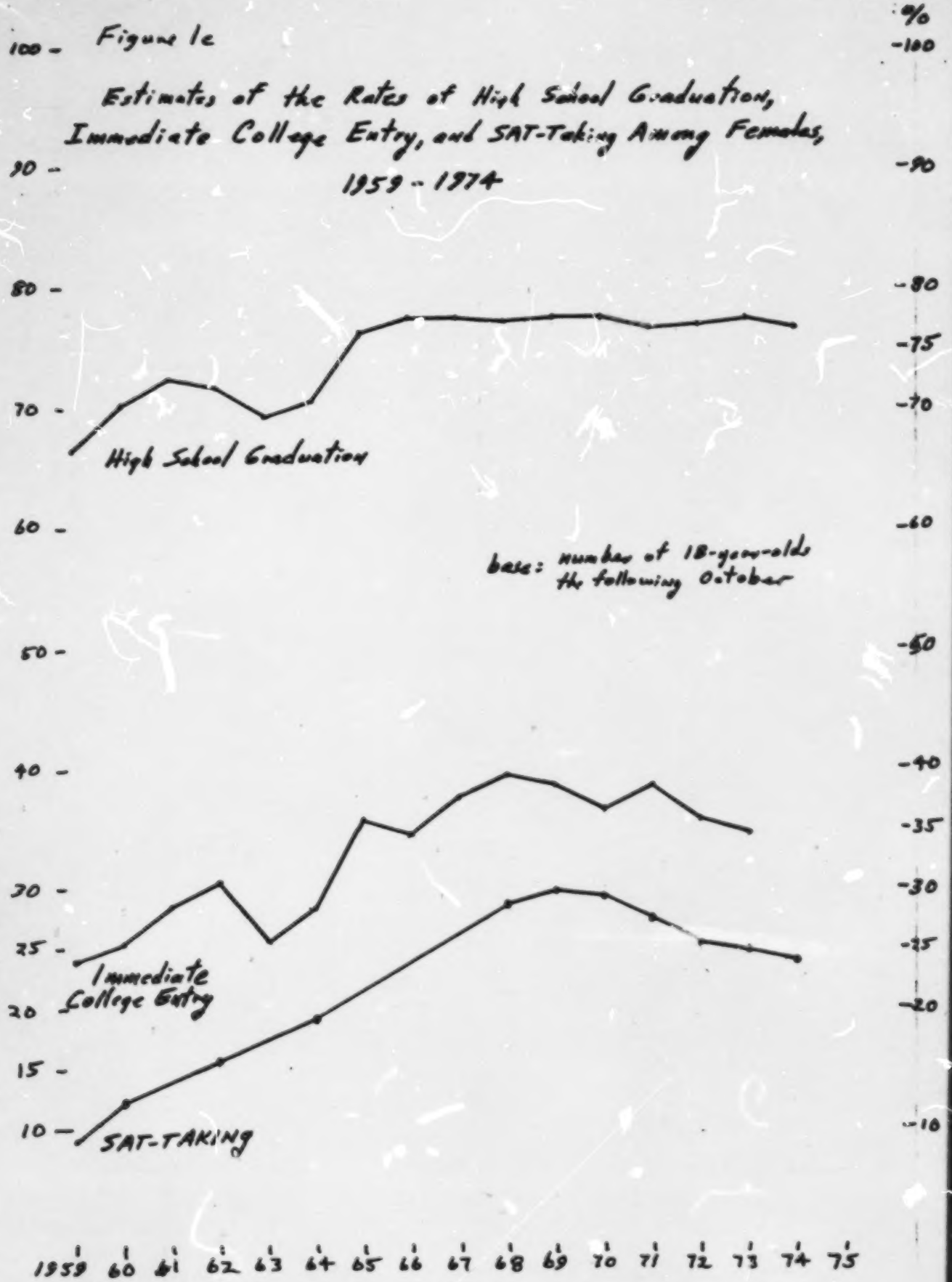

Table 7b:

Estimates of the Rate of High School Graduation, Immediate College Entry, and SAT-Taking Among Males, 1959-1974

High School Class	number of 18-year-olds the next October (in 1,000's)	High School Graduates		Immediate College Entrants			SAT-Takers			
		number (in 1,000's)	% (18)	number (in 1,000's)	% (18)	% (Gr)	number (in 1,000's)	% (18)	% (Gr)	% (ICE)
1959	1,301	790	60.7	360	27.7	45.6	167	12.8	21.1	46.4
1960	1,411	898	63.6	408	28.9	45.4	229	16.2	25.5	56.1
1961	1,432	958	66.9	445	31.1	46.5	n/a	n/a	n/a	n/a
1962	1,405	941	67.0	480	34.2	51.0	276	19.6	29.3	57.5
1963	1,466	959	65.4	415	28.3	43.3	n/a	n/a	n/a	n/a
1964	1,698	1,123	66.1	570	33.6	50.8	390	23.0	34.7	68.4
1965	1,831	1,314	71.8	718	39.2	54.6	n/a	n/a	n/a	n/a
1966	1,790	1,326	74.4	709	39.6	53.5	n/a	n/a	n/a	n/a
1967	1,790	1,332	74.4	658	36.8	49.4	n/a	n/a	n/a	n/a
1968	1,818	1,341	73.8	748	41.1	55.8	522	28.7	38.9	69.8
1969	1,870	1,402	75.0	812	43.4	57.9	558	29.8	39.8	68.7
1970	1,943	1,433	73.8	741	38.1	51.7	569	29.3	39.7	76.8
1971	1,996	1,456	72.9	788	39.5	54.1	547	27.4	37.6	69.4
1972	2,038	1,495	73.4	749	36.8	50.1	524	25.7	35.1	70.0
1973	2,076	1,524	73.4	730	35.2	47.9	516	24.9	33.9	70.2
1974	2,126	1,552	73.0	n/a	n/a	n/a	493	23.2	31.8	n/a

Table 7c:

Estimates of the Rate of High School Graduation, Immediate College Entry, and SAT-Taking Among Females, 1959-1974

High School Class	number of 18-year-olds the next October (in 1,000's)	High School Graduates		Immediate College Entrants			SAT-Takers			
		number (in 1,000's)	% (18)	number (in 1,000's)	% (18)	% (Gr)	number (in 1,000's)	% (18)	% (Gr)	% (ICE)
1959	1,273	849	66.7	305	24.0	35.9	115	9.0	13.5	37.7
1960	1,378	966	70.1	350	25.4	36.2	168	12.2	17.4	48.0
1961	1,400	1,013	72.4	402	28.7	39.7	n/a	n/a	n/a	n/a
1962	1,371	984	71.8	420	30.6	42.7	216	15.8	22.0	51.4
1963	1,429	991	69.3	369	25.8	37.2	n/a	n/a	n/a	n/a
1964	1,650	1,167	70.7	467	28.3	40.0	317	19.2	27.2	67.9
1965	1,774	1,351	76.2	636	35.9	47.1	n/a	n/a	n/a	n/a
1966	1,773	1,346	77.6	600	34.6	44.6	n/a	n/a	n/a	n/a
1967	1,734	1,348	77.7	653	37.7	48.4	n/a	n/a	n/a	n/a
1968	1,760	1,360	77.3	696	39.5	51.2	442	25.1	32.5	63.5
1969	1,812	1,427	78.8	704	38.9	49.3	484	26.7	33.9	68.8
1970	1,883	1,463	77.7	686	36.4	46.9	501	26.7	34.2	73.0
1971	1,936	1,487	76.8	747	38.6	50.2	493	25.5	33.2	70.0
1972	1,973	1,520	77.0	708	35.9	46.6	499	25.3	32.8	70.5
1973	2,005	1,552	77.4	695	34.7	44.8	499	24.9	32.2	71.8
1974	2,052	1,578	76.9	n/a	n/a	n/a	493	24.0	31.2	n/a

of the expansion in college-going and SAT-taking is obscured by an increase in high school graduation.

Table 7 includes estimates of the rate of immediate college entry among both 18-year-olds and high school graduates, and includes estimates of the rate of SAT-taking among 18-year-olds, high school graduates, and immediate college entrants. Figure 1 graphs these percentages for the base of all 18-year-olds so that the full extent of the expansion in all three of the populations can be seen.

(The estimates of the level of immediate college entry were derived from samples small enough for the "standard error" of these percentages to be about two or three percentage points. This sampling error causes some fluctuation from year to year in the derivative estimates of the rate of immediate college entry and in the estimates of the rate of SAT-taking among immediate college entrants.)

In Figure 1 we see an increase for both sexes in the rate of high school graduation until about 1965 or 1966, when the percentage of all young people graduating from high school stabilized just below 75 percent in the case of the males and just above 75 percent in the case of the females. This lends a perspective of the score decline that has been overlooked. We are worrying about a decline in college-entrance test scores among a group of 18-year-olds who are about as numerous as the young people who do not graduate from high school. That one-quarter of all American young people do not graduate from high school is undoubtedly a social fact of by far the greater consequence, and we see no sustained progress here for nearly ten years.

We also see in Figure 1 that the rate of immediate college entry also increased since 1959, recovered from an interruption

about 1963, and continued to increase until about 1968, in the case of the females, or 1969, in the case of the males. Then the rate of immediate college entry turns downward in about 1969 among females and 1970 among males.

The history of SAT-taking is seen to have been very similar. At the beginning of this period, in 1959, the students taking the SAT were about half as numerous as the immediate college entrants. As early as 1964, SAT-takers became as numerous as about two-thirds of the immediate college entrants and, if due allowances are made for sampling error in the estimates of the level and rate of immediate college entry, the SAT-takers remain about equally numerous relative to the immediate college entrants between 1964 and 1973, the most recent high school class for which an estimate of the level of immediate college entry is now available.

Here we see enough expansion to explain score declines larger than those actually experienced by 1968 in the case of the females and by 1969 in the case of the males. Equating expansion in college-going and SAT-taking with score declines turns, however, on the assumption that these increases in college-going and anticipatory SAT-taking were accompanied by declines in the average academic ability of the expanding population of immediate college entrants. If that could be established, then the regularity with which SAT-takers have been as numerous since 1964 as two-thirds the immediate college entrants would make it plausible that the declines seen in SAT score averages through 1968 or 1969 reflect that more general decline.

college-going in relation to ability level, 1956-1968

During roughly the first half of the period under consideration

here--while the SAT score averages by testing year (Table 6) were not declining--college-going was occurring in the midst of considerable concern about a "loss of talent," about the apparent fact that large numbers of the more able and most able students academically were not continuing their schooling into college. The response to this concern was a "search for talent" that was conducted in a meritocratic spirit and apparently was productive.

An analysis of the class of students graduating in 1956 was presented at a College Board colloquium[1] and indicated that of the 1956 graduates in the upper thirty percent of academic ability, about two-thirds of the men and about one-half of the women went directly to college. The corresponding estimates for the graduates of 1961, derived[2] from a College Board "norms" study are three-fourths and two-thirds for men and women, respectively.

The data available for this early period do not indicate that there was a general increase in the percentage of high school graduates going directly to college. That is, the data suggest that in these early years the more able graduates were an increasing fraction and the less able graduates a decreasing fraction of the stream of college-going students. If so, then the average ability level of the population of immediate college entrants must have increased between 1956 and 1961 and, perhaps, for a few years subsequently. And this may explain why SAT score averages did not decline in the late 1950's and very early 1960's, despite the fact that in those years SAT-taking students were increasing rapidly as a fraction of all immediate college entrants.

In the years following 1961 there was an increase in the rate of college-going even if the high school graduates, rather than the 18-

year-olds, are the base for the calculation. And in these years, college entry came to be promoted more under the influence of egalitarian values and less under the influence of meritocratic values as the search for talent was increasingly replaced by a search for equity. Because of this shift in values, it is commonly assumed that this expansion in college-going was accompanied by a reduction in the average academic ability of the college-going population.

The hypothesis that graduates going directly to college became on the average less able academically as they increased as a fraction of all young people and all high school graduates between 1961 and 1968 can be tested against the data in Table 8.

Table 8. Estimated SAT Score Averages for All Immediate College Entrants 1961 and 1968

	Verbal		Mathematical	
	male	female	male	female
1961	430	460	500	460
1968	460	470	490	450

These averages were generated by "following up" samples of all seniors of 1960-61 and all juniors of 1966-67 who participated in College Board "norms" studies[3]. The differences between the estimates from the two samples could easily be due to sampling error. And we could try to persuade ourselves that sampling error or something else obscures in these data declines that occurred in the populations sampled. But that does not seem likely, and these data suggest that the search for equity in college entrance in the 1960's also produced a considerable increase in the harvest of talent--that the increase in college-going was as large among students with scores above the 1961 averages as it was among less able students.

Whether equity was served equally well is, perhaps, another question. Of these two College Board studies, only the one for the graduates of 1968 produced data on socioeconomic status as well as developed ability. How Verbal ability intersected with socioeconomic status in the determination of post-high school activity in 1968 can be seen for two sexes separately in the data in parentheses in Table 9. The data for 1968 are put in parentheses to separate them clearly from similar data produced by a rather different sample of 1960-61 seniors who were tested as juniors in 1959-60 and subsequently "followed up" by Project TALENT. The College Board study and the Project TALENT study proceeded so differently that only interpretation of gross differences is warranted.

Consider, for example, the women in the highest (4th) ability quarter and the lowest (1st) socioeconomic quarter, those for whom percentages are given in the upper right-hand corner of Table 9b. From the Project TALENT study we have the estimate that in 1961 about half of all such women went directly to college. From the College Board study, we have the estimate that by 1968 about two-thirds of such women went directly to college. And the apparent increase is shown as occurring in four-year colleges. It is interesting to compare those entries with those in the lower left-hand corner for women in the lowest ability quarter and the highest socioeconomic status quarter. Among these women the increase in immediate college entry seems to have been at least as large and also to have occurred in four-year colleges.

In terms of average ability level, the net effect of all such increases between 1961 and 1968 apparently was, judging from the two College Board norms studies, a larger population of immediate college entrants composed of students who were, on the average, no less able

Table 9a

Percentages of 12th-Grade Males Classified

by SES, Ability, and 13th-Grade Enrollment
1960-61 and 1967-68 (in parentheses)

First (Lowest) Socioeconomic Quarter

	Ability Quarter			
	1st (Low)	2nd	3rd	4th (High)
Four-year college	5 (7)	9 (17)	26 (33)	42 (65)
Junior college	4 (7)	7 (12)	6 (15)	16 (10)
Technical school	1 (3)	3 (3)	3 (2)	2 (2)
Trade School	3 (1)	2 (1)	2 (1)	1 (0)
Armed Forces school	8 (1)	16 (1)	10 (1)	8 (0)
Other	N/A 7)	N/A (5)	N/A (6)	N/A (4)
None	79 (75)	63 (61)	53 (43)	31 (19)

Second Socioeconomic Quarter

	Ability Quarter			
	1st (Low)	2nd	3rd	4th (High)
Four-year college	11 (8)	18 (23)	28 (38)	66 (65)
Junior college	3 (10)	7 (22)	10 (20)	8 (14)
Technical school	3 (4)	2 (4)	3 (6)	2 (2)
Trade school	3 (1)	7 (2)	2 (0)	1 (0)
Armed Forces school	8 (0)	13 (2)	9 (0)	6 (3)
Other	N/A (2)	N/A (5)	N/A (5)	N/A (1)
None	72 (76)	53 (43)	48 (32)	17 (17)

Third Socioeconomic Quarter

	Ability Quarter			
	1st (Low)	2nd	3rd	4th (High)
Four-year college	9 (16)	25 (19)	38 (30)	71 (74)
Junior college	7 (17)	11 (28)	10 (32)	8 (11)
Technical school	5 (4)	3 (4)	6 (2)	2 (0)
Trade school	3 (3)	2 (0)	2 (2)	1 (0)
Armed Forces school	6 (1)	10 (0)	10 (2)	5 (1)
Other	N/A (7)	N/A (6)	N/A (6)	N/A (1)
None	70 (52)	49 (43)	34 (28)	13 (11)

Fourth (Highest) Socioeconomic Quarter

	Ability Quarter			
	1st (Low)	2nd	3rd	4th (High)
Four-year college	23 (28)	33 (38)	61 (52)	85 (81)
Junior college	11 (12)	12 (24)	11 (17)	5 (7)
Technical school	5 (0)	5 (4)	2 (3)	1 (0)
Trade school	5 (4)	3 (0)	3 (2)	0 (0)
Armed Forces school	7 (0)	8 (1)	5 (2)	2 (2)
Other	N/A (0)	N/A (5)	N/A (6)	N/A (2)
None	49 (56)	39 (27)	18 (17)	7 (7)

than the smaller group of students who composed the 1961 population of immediate college entrants.

This indicates that the declines seen (in Table 6) in SAT score averages between the early 1960's and 1968 were not caused by the concurrent expansion in college-going. And we saw previously (in Figure 1) that the SAT-taking population did not expand in relation to the population of immediate college entrants following 1964. The SAT score declines seen in this middle period occurred among students who were equal in number to about two-thirds of the immediate college entrants both at the beginning and at the end of this period.

This suggests, of course, that even the first of the declines in SAT scores averages can not be explained as a by-product of either an expansion in the population of immediate college entrants or an expansion in the population of SAT-takers. This follows not from expansion not occurring--there was more than enough expansion to account for declines larger than observed--but rather from the fact that the larger population does not seem to have become less able in the course of expanding and from the fact that expansion in the smaller SAT-taking population seems to have paralleled expansion in the population of immediate college entrants since 1964, when the score declines apparently began.

Table 9b

Percentages of 12th-Grade Females Classified

by SES, Ability, and 13th-Grade Enrollment
1960-61 and 1967-68 (in parentheses)

First (Lowest) Socioeconomic Quarter

	Ability Quarter			
	1st (Low)	2nd	3rd	4th (High)
Four-year college	6 (9)	8 (14)	18 (27)	36 (57)
Junior college	2 (7)	5 (11)	7 (14)	8 (9)
Nursing school	0 (3)	1 (1)	3 (4)	7 (3)
Secretarial or business	4 (4)	8 (7)	9 (5)	6 (1)
Technical school	2 (1)	4 (0)	1 (3)	1 (1)
Other	N/A (14)	N/A (9)	N/A (11)	N/A (5)
None	86 (62)	74 (58)	62 (36)	42 (22)

Second Socioeconomic Quarter

	Ability Quarter			
	1st (Low)	2nd	3rd	4th (High)
Four-year college	8 (9)	8 (14)	22 (34)	43 (56)
Junior college	4 (8)	4 (15)	8 (18)	8 (14)
Nursing school	1 (1)	2 (4)	10 (5)	6 (6)
Secretarial or business	5 (8)	9 (5)	8 (3)	9 (1)
Technical school	7 (1)	4 (1)	3 (2)	0 (2)
Other	N/A (9)	N/A (13)	N/A (8)	N/A (4)
None	75 (64)	73 (49)	49 (31)	34 (16)

Third Socioeconomic Quarter

	Ability Quarter			
	1st (Low)	2nd	3rd	4th (High)
Four-year college	7 (11)	14 (30)	32 (50)	62 (67)
Junior college	6 (19)	7 (18)	8 (17)	9 (12)
Nursing school	0 (3)	4 (4)	5 (5)	9 (3)
Secretarial or business	8 (3)	13 (3)	8 (1)	3 (2)
Technical school	5 (2)	3 (1)	1 (1)	1 (1)
Other	N/A (9)	N/A (7)	N/A (5)	N/A (1)
None	74 (54)	59 (36)	46 (20)	16 (14)

Fourth (Highest) Socioeconomic Quarter

	Ability Quarter			
	1st (Low) 1	2nd	3rd	4th (High)
Four-year college	14 (42)	30 (47)	51 (59)	80 (79)
Junior college	12 (13)	7 (19)	14 (17)	5 (8)
Nursing school	0 (7)	3 (2)	3 (4)	4 (3)
Secretarial or business	6 (0)	12 (4)	7 (3)	2 (1)
Technical school	7 (0)	5 (0)	1 (0)	0 (0)
Other	N/A (0)	N/A (6)	N/A (5)	N/A (2)
None	61 (39)	43 (22)	24 (11)	9 (6)

That expansion alone apparently does not explain the declines seen in SAT score averages by 1968 is encouraging in the sense that if expansion alone seemed to explain those declines, then a different explanation would have to be sought for the more acute and worrisome declines seen since 1968. As it is, we can hope to find shifts in the composition of the expanding SAT-taking population, changes in its make-up that might have continued as the rate of college-going and SAT-taking began to decrease and as the score decline became more acute in the context of contracting populations. As will be seen below, there have been over the years substantial shifts in the distribution of SAT-takers by region of residence.

regional differences in SAT-taking and immediate college entry

All three rates examined above--high school graduation, immediate college entry, and SAT-taking--vary from one part of the country to another. The question here, however, is whether the distribution of SAT-taking students by region has shifted in ways that would seem to account for the trends observed in SAT score averages.

Percentage distributions of SAT-taking students by region of residence are given in Table 10 for selected years between 1959 and 1968. In intervening columns, the changes in these percentages between 1959 and 1964 and between 1964 and 1968 are noted. Beneath these columns, the absolute value of all such shifts in the distribution of SAT-takers by region are given. In Table 11, similar data are provided for immediate college entrants for the years 1963 and 1968.

In general, what we see in Table 10 and Table 11 is a convergence between the shifting distribution of SAT-takers by region and the relatively stable distribution of immediate college entrants by region.

Table 10. Percentage Distributions of SAT-Takers
By Region of Residence, 1959-1968

Region	1959	1960	1962	1964	change 1959 to 1964	1968	change 1964 to 1968
E.N. Central	11.5	12.8	14.0	15.1	+ 3.6	16.8	+1.7
E.S. Central	2.1	1.9	1.8	2.0	+ 0.1	1.9	-0.1
Mid. Atlantic	38.0	37.0	31.5	31.4	- 7.6	30.0	-1.4
Mountain	1.9	2.4	2.6	2.4	+ 0.5	2.2	-0.2
New England	16.0	15.1	11.5	11.1	- 4.9	10.5	-0.6
Pacific	8.3	8.5	11.3	10.6	+ 2.3	10.2	-0.4
South Atlantic	14.6	14.5	15.8	15.6	+ 1.0	17.2	+1.6
W.N. Central	2.9	2.9	3.1	3.0	+ 0.1	3.6	+0.6
W.S. Central	3.1	2.9	5.0	5.4	+ 3.3	5.7	+0.3
Other	1.4	2.0	3.5	3.6	+ 2.2	2.0	-1.6
Total Change					→25.6		→8.5

East North Central states: Illinois, Indiana, Michigan, Ohio, Wisconsin.
East South Central states: Alabama, Kentucky, Mississippi, Tennessee.
Middle Atlantic states: New Jersey, New York, Pennsylvania.
Mountain states: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming.
New England states: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont.
Pacific: Alaska(for 1968 only), California, Hawaii(for 1968 only) Oregon, Washington.
South Atlantic states: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia.
West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota.
West South Central: Arkansas, Louisiana, Oklahoma, Texas.
Other: includes SAT-takers from other parts of the world and, through 1964 also includes Alaska and Hawaii, thus spuriously decreasing, through 1964, the percentages for the Pacific states.

This is a record, in effect, of the extent to which SAT-taking increasingly became a national phenomenon as SAT-takers increased from being about half as numerous as all immediate college entrants being equal in number to two-thirds of all such students. That increase in SAT-taking was disproportionately large in the parts of the country where relatively few graduates took the SAT in the late 1950's.

In 1959 more than half--about 54 percent--of all SAT-takers were from one of the six New England states or one of the three Mid-Atlantic states (New Jersey, New York, Pennsylvania). The number of graduates from these states who took the SAT grew enormously following 1959. But still larger increases in SAT-taking by graduates from other regions increased the percentage from those other regions from 46 percent in 1959 to nearly 60 percent in 1968. As a result the percentage of SAT-takers from the Northeast decreased from about 54 percent in 1959 to little more than 40 percent by 1968.

The years 1959 to 1968 contain however both an initial period of effectively stable score averages and a subsequent period following 1962-63 during which declines in SAT score averages first appeared. And what we see in Table 10 is that the shifts in the distribution of SAT-takers by region which occurred over this entire period occurred for the most part by or even before 1964, when scores began to decline.

The percentage of SAT-takers from the Northeast decreased from 54 percent in 1959 to 43 percent by 1962, and consequently the percentage from other regions increased from 46 percent in 1959 to 57 percent in 1962. And SAT score averages did not decline during these years. Further but relatively slight shifts in the same direction had occurred by 1964, when SAT score averages turned down, and further but still

Table 11. Percentage Distributions of Immediate College Entrants By Region of Residence, 1963 and 1968

Region	1963	1968	change 1963 to 1968
E.N. Central	19.1	19.1	0.0
E.S. Central	5.0	5.2	+0.2
Mid. Atlantic	16.1	18.3	+2.2
Mountain	4.6	4.9	+0.3
New England	5.8	6.1	+0.3
Pacific	18.8	16.3	-2.5
South Atlantic	11.5	11.4	-0.1
W.N. Central	9.1	8.8	-0.3
W.S. Central	9.1	8.9	-0.2
Other	0.8	1.1	+0.3
Total Change			6.4

slight shifts, and still in the same direction, occurred by 1968.

Without having score averages for students from these regions, and those are not available, it cannot be proven that these geographical shifts do not account for the SAT score declines seen by 1968, but it seems very unlikely that those declines were caused by the extent to which SAT-taking increasingly became a national phenomenon over these years, but largely before scores began to decline.

If this is correct, then refining the expanding-population hypothesis by focusing on differential expansion by region of residence does not advance our understanding of the first SAT score declines except in a negative sense by narrowing the likely possibilities. Unfortunately, however, this narrows the possibilities beyond those for which we have data. It may be, that is, that between 1964 and 1968 the population of SAT-taking students became increasingly composed of disproportionately large fractions of, say, the college-going students identified in Table 9 as being in the lower ability quarters and upper socioeconomic status quarters. But we have no way of knowing whether they were, and consequently can not try to test that hypothesis.

We have then reached an impasse in trying to explain the declines seen in SAT score averages by 1968 as a by-product of expanding populations. As a result, we must turn to the score declines that have occurred since 1968 and among contracting populations without having identified any previous trend in either college-going or SAT-taking that might, by its continuation beyond 1968, help account for the continuing decline in SAT score averages.

In this later period we are advantaged by having with reference to the decline itself the additional detail provided in Tables 5 a, b, and c., and advantaged still further by having Student Descriptive Ques-

tionnaire responses summarized for the graduates of 1972, 1973 and 1974 in the College-Bound Seniors series. This additional information about the more recent SAT score declines and the populations among which the last of them occurred is, however, more than offset by the lack of more recent information about all immediate college entrants.

score declines among contracting populations

Following 1968 the rate of immediate college entry turns downward for both sexes. Having only data from samples of high school graduates, and therefore only data subject to fluctuations due to sampling error, we cannot pinpoint the years with certainty. But it seems that the increase in college-going among women persisted through 1968 and the increase among men persisted through 1969. Whether a decrease set in immediately following these years is not clear, but the data in Tables 7b and 7c suggest that the rate of immediate college entry began to decrease for women in 1969 and for men in 1970. And the decrease in anticipatory SAT-taking seems in the case of both men and women to have "lagged." The percentage of graduates taking the SAT does not decrease for either sex until the class of 1971 is reached. (Such a lag is not surprising, because we would expect the percentage of students actually going directly to college to begin to decrease before the percentage of students planning on not going to college would decrease.)

We see considerable sex differences in the decreases in the rates of SAT-taking, with the decreases being disproportionately large for men, regardless of whether the high school graduates or the 18-year-olds are the base for the calculation. Similar sex differences are seen in the decreases in the rates of immediate college entry. Because these college-going rates derive from data based on samples, we can be far

less sure that changes in them are significant and, even if significant, not misleadingly large or small. But it seems most likely that we are not misled here--that college-going has decreased more among men than among women since the late 1960's and since the war in Southeast Asia began to be "wound down."

What we are most curious to know is which men and women have begun in decreasing percentages since about 1968 or 1969 to go directly to college on graduating from high school. Tables 9a and 9b can not be extended now for the various "cells" of ability-by-socioeconomic status quarters. But the data in Table 12 suggest that when the data in Table 9 are extended about a year from now for the graduates of 1972, we will then see that decreases in college-going have occurred among students from all socioeconomic strata but been larger for those from families in the second and third income quarters.

Table 12 includes rates of full-time undergraduate enrollment, by family income, for families with a civilian dependent 18 to 24 years old. These data are in the middle rows of Table 12. At the top of the table we see data from which the percentage of all families with the various incomes can be calculated. Slightly more than 25 percent of all such families, for example, had incomes over $15,000 in 1972 dollars. And the percentage of such families with a civilian dependent between 18 and 24 enrolled as a full-time undergraduate decreased from nearly 60 percent in 1969 to nearly 56 percent in 1972, a decrease of about 4 percentage points for roughly the fourth or top income quarter.

The next income range, $10,000 to $14,999, also includes about 25 percent or a quarter of all American families with a civilian college-age dependent. And among these families, the percentage with such a

Table 12. Primary Families With Civilian Dependent Members 18 to 24 Years Old and Percent Enrolled Full-Time in College by Family Income: October 1967 to 1972

(Numbers in thousands. Income in constant 1972 dollars. Civilian noninstitutional population)

Family income and enrollment status of family member	1972	1971	1970	1969	1968	1967
FAMILIES WITH DEPENDENT MEMBERS 18 TO 24 YEARS OLD[1]						
Total, reporting income	8,979	8,933	8,614	8,053	7,979	7,833
Under $3,000	784	707	654	601	646	666
$3,000 to $4,999	893	884	811	736	729	722
$5,000 to $7,499	1,171	1,259	1,267	1,199	1,227	1,239
$7,500 to $9,999	1,192	1,390	1,371	1,278	1,297	1,325
$10,000 to $14,999	2,502	2,335	2,254	2,049	1,940	1,908
$15,000 and over	2,437	2,358	2,257	2,190	2,140	1,973
PERCENT WITH MEMBERS ATTENDING COLLEGE FULL TIME						
Total	37.8	38.4	39.8	42.0	40.1	39.1
Under $3,000	14.8	14.0	13.9	16.5	15.9	13.1
$3,000 to $4,999	20.0	21.4	19.5	23.0	21.5	20.6
$5,000 to $7,499	28.0	28.5	29.1	30.5	29.5	28.0
$7,500 to $9,999	32.1	33.0	36.0	38.0	36.3	34.8
$10,000 to $14,999	40.8	41.5	44.2	46.4	45.4	45.9
$15,000 and over	56.1	57.3	58.3	59.9	57.3	58.0
PERCENT DISTRIBUTION OF FAMILIES WITH MEMBERS ATTENDING COLLEGE FULL TIME						
Total	100.0	100.0	100.0	100.0	100.0	100.0
Under $3,000	3.4	2.9	2.7	2.9	3.2	2.8
$3,000 to $4,999	5.3	5.5	4.6	5.0	4.9	4.9
$5,000 to $7,499	9.7	10.5	10.8	10.8	11.3	11.3
$7,500 to $9,999	11.3	13.4	14.4	14.4	14.7	15.1
$10,000 to $14,999	30.1	28.3	29.1	28.1	27.5	28.6
$15,000 and over	40.3	39.4	38.4	38.8	38.4	37.4

[1]A dependent family member is a relative of the head of household, excluding the head's wife or any other relative who is married with a spouse present. Such persons are generally the sons and daughters of the household head.

dependent enrolled in college decreased from about 46 percent in 1969 to about 40 percent in 1972, a larger decrease of about 6 percentage points for this third income quarter.

The next-lowest income range, $7,500-$9,999, includes only about half as many families, but among this eighth (roughly) of the families, this enrollment rate decreased from about 38 percent in 1969 to about 32 percent in 1972, a decrease of about 6 percent and a decrease as large as that just noted for the whole of the third income quarter ($10,000-$14,999).

Between $5,000 and $7,499, the corresponding percentages are 30.5 percent for 1969 and 28.0 for 1972, a smaller decrease of 2.5 percentage points. (There are enough families in this range for it together with the range just above it to include about a quarter of all families. Consequently, a rough estimate for the entire $5,000-$9,999 income range --roughly the second income quarter--is a decrease of slightly more than 4 percent.)

The families remaining, those with incomes below $5,000, are less than a quarter of all American families with civilian dependents between 18 and 24 years old. The rate of full-time undergraduates enrollment among these families decreased between 1969 and 1972 from 23 percent to 20 percent for those with incomes over $3,000 and decreased from 16.5 percent to 14.8 percent for those with incomes below $3,000. For both these income ranges combined--roughly the lowest income fifth --the decrease would be between 2 and 3 percentage points.

Thus, we see in Table 12 the suggestion that the smallest decreases in college-going since 1969 have come from among young people whose families are at the extremes of the income distribution, or, more precisely, in the top quarter or bottom fifth. Larger decreases

are indicated for students from families in the third income quarter and for students from families in the upper half of the second income quarter.

Having seen this, our understanding of the score declines is again advanced in an essentially negative sense. That is, it seems reasonable to conclude that the recent score declines did not result from increases in college-going continuing beyond 1968 or 1969 in the case of students from low-income families, with all the disadvantage, including a tendency toward lower scores, that accompanies such poverty. Nor did the declines apparently result from disproportionately large decreases in college-going among students from the upper income quarter, with all the advantagement, including a tendency toward higher scores, that accompanies such affluence.

This is not to say conclusively that SAT score averages did not decline following 1968 or 1969 because of a change in the socioeconomic mix of the SAT-takers. That mix might have shifted differently among the population of students taking the SAT. And it could have done so in a way that tended to depress (or sustain) SAT score averages. But data necessary either to confirm or to reject such a hypothesis is not available to us, and the most we can say is that such shifts are not observed among all full-time undergraduates between 1969 and 1972 and therefore seem unlikely to have occurred among all immediate college entrants.

We have now seen a decade of SAT score declines, and in the past few years many have taken those declines, which occured among roughly a fourth of all 18-year-olds and a third of all high school graduates, as a reflection of a progressive decline in developed reasoning abilities among young Americans generally. This hypothesis is extravagant in the sense that assumptions far less sweeping suffice to account for the SAT score declines observed among much smaller student populations.

The data just reviewed seem to provide no support for these less extravagant hypotheses, but those data are not decisive as well as not supportive. And despite those data, shifts in the composition of the college-bound population or in the population of SAT-takers could have caused at least part of the SAT score declines.

It is also possible, of course, that the more extravagant hypothesis has some validity, that there has been a quite general decline in developed reasoning abilities, and that the SAT score decline is, at least in part, a reflection of that general decline. In this connection, we are fortunate to have the College Board norms studies cited previously, those conducted with samples of all students who were high school seniors in 1960-61 and 1967-68. These produced the following estimates.

Table 13. Estimated SAT Score Averages for All Seniors, 1960-61 and 1967-68

	Verbal		Mathematical	
	male	female	male	female
1960-61	372	376	438	385
1967-68	390	393	422	382

"The extent to which the differences in means /averages/ for the two studies are attributable to changes in the ability level of seniors during the six-year period, to changes in the self-selection of schools participating in the two studies, to sampling error, or to other factors cannot be determined precisely."

The data and the quotation are from page 81 of the College Board ATP technical manual, which was drafted before a persistent decline in SAT scores was apparent. If we make much of the apparent increases in developed verbal reasoning ability among all seniors of these years, then we will have to make something of the apparent decrease in developed mathematical reasoning ability among males but not among females. But however cautiously we interpret these data, we see in them no indication whatever of a general decline in developed ability throughout most of the 1960's and while the fraction of all 18-year-olds graduating from high school was still increasing. As a result, we have another example of a population, in this case all seniors rather than all immediate college entrants, undergoing considerable expansion without, in the process, becoming less able.

This is of some consequence, because both the data in Table 13 on high school seniors and the data in Table 8 on immediate college entrants suggest that a considerable increment in the harvest of academic talent was reaped in the course of a search primarily for equity and social equality. And we sometimes act if we have the impression that we must choose between promoting the able and promoting the disadvantaged. That was evidently not the case in the 1960's, and with roughly one-quarter of all young people still not graduating from high school, we should persistently question suggestions that it may be true now.

Since 1968 or 1969, however, we have been seeing not expansion, but rather contraction, in the fraction of high school graduates going immediately to college. During the same years, we have seen marked declines in the SAT scores earned by the some two-thirds of the college-bound students who take the test. Our most extravagant hypothesis would attribute at least part of those declines to a progressive decline in developed reasoning abilities among students generally.

We have just seen evidence that no such decline occured between 1961 and 1968, despite the fact that the percentage of all young people graduating from high school increased in the interval. That percentage has not increased since, and our most extravagant hypothesis posits a decline in scholastic aptitude among a student population that has been effectively stable in size relative to the population of all young people.

Whether such a general decline has been in progress since 1968 seems likely to be revealed in the data that will be produced from a College Board norms study in which a sample of 1974-75 juniors recently participated. When these data are available, Table 13 can be extended to the present. When it has been, we can make a more educated guess as to the extent of the context in which the declines among SAT-takers must be viewed.

unpleasant alternatives

If we are fortunate, we will be able to infer from the extension of Table 13 that there has been no decline in developed verbal and mathematical reasoning abilites among students generally. The next step would then seem to be to extend Table 8 so as to determine whether

since 1968 the smaller population of students going directly to college has become less able as it came to represent a smaller fraction of all high school graduates. (Even in the event of a general decline, Table 8 would need to be extended in order to determine whether the effect was heightened or diminished among immediate college entrants.)

A decline in these developed abilities among students generally would seem to imply that collectively colleges face a more severe instructional challenge than they have yet met. The same challenge is faced if students generally are able as ever but if, nevertheless, immediate college entrants are less able because fewer of the more able graduates or more of the less able graduates decide to go to college.

A decline in scholastic aptitude among immediate college entrants but not among students generally might also, however, present colleges with an additional challenge that might be called a "marketing" challenge. The scholastically more apt of the students can, of course, employ their talents productively outside of college just as the less apt can thrive in college. And it is also perhaps the case that in the mid- to late-1960's an unrealistically high, perhaps even an undesirably high, percentage of the more apt students began to go directly to college on graduating from high school. Nevertheless, reductions since 1968 in the percentage of the scholastically more apt of the students who chose to go directly to college, if found, would seem to suggest that collectively colleges needed to increase their appeal for such students.

studying and anticipating score trends

Whatever continuing study of score trends at a very global level produces, institutions will continue to need to study the trends they have experienced and, as far as possible, to anticipate future trends. The analysis and projection of score trends is, of course, but part of a larger need to understand in more general terms the evolution of successive freshman classes and their progress through collegiate experiences.

The anticipation, via projections, of future trends must be grounded in analyses of past experience. Such analyses are most easily, efficiently, and inexpensively obtained by participation in the Admission Testing Program (ATP) Summary Report services. The resulting reports on prospective applicants, applicants, accepted applicants, enrolling freshmen, and persisting freshmen provide, among other things, the data needed for both simple and sophisticated analyses of yield at various score levels.

As a result, whatever SAT score decline a college experiences among its enrolling freshmen can be traced back in time and through the various stages of the process of college entrance until finally it appears as a trend among prospective applicants. Or, to put it differently and more aptly, trends among prospective applicants will ultimately translate, as a result of a mixture of student and institutional decisions, into trends among enrolling freshmen. In the process a trend may be accentuated, dampened, or even inverted, especially if the institution, anticipating an unwanted trend or lack of some desired change, tries to intervene effectively in the "natural" course of events. But in the end a freshman class is determined, and after it is, the analysis of the process of college entry provided by the

ATP Summary Report services can be used to see how the characteristics of that class were anticipated among "prospective applicants" -- the students who have the College Board forward their ATP records to the college.

This permits a score decline (and much else) among enrolling freshmen to be anticipated by an amount of time ranging from several months to as much as a year and a half. How early the signals can be read depends primarily on how successfully the college encourages students to have the Board forward an ATP College Report from their participation in the program as juniors. How well the signals can be read depends largely on how successfully the college encourages students to have the College Board, rather than only their high schools, forward their ATP records to the college.

Both the analyses of past experience and the projection of future outcomes can be refined more than is likely to be productive. The trick probably is to treat separately only those subgroups of prospective applicants, applicants, ..., etc. for which yield is known to be relatively high or low And if staff time for such work is in short supply, the analysis and projection of yield might well proceed only for the student subgroup known to supply the "core" of enrolling freshman, e.g., only for instate students, or only for a student subgroup of particular concern, e.g., engineering majors, minority students, etc.

Such analyses are comforting to have because they increase the college's understanding of its experience and enable planning to proceed with more confidence as well as more realistically. The projections, which continually moderate that planning, are certain not to be precisely correct, but they also seem certain never to be as incorrect as pure

intuition. And as the cycle of college entrance proceeds, the projections, by incorporating larger and larger percentages of all the information that will ever be available, inevitably come that much closer to being the next year's actual outcomes. One of the rewards of the staff doing this work is that, in the end, they are always correct.

coping with anticipated trends

Anticipation of a trend simply creates time in which to plan to react to its projected arrival and in which to intervene so as to produce another outcome. What this boils down to, in the case of a projected score decline, is planning to accept some mix of the instructional challenge presented by entering classes which are progressively less apt and of the marketing challenge presented by a decision to try to limit the instructional challenge to manageable proportions.

Such plans would seem to be difficult to make. Taking on more of the instructional challenge than can be successfully met would seem to result in the college having subsequently to choose between on the one hand disappointing some of the students it had hoped to serve and "grade inflation" on the other. Either seems likely to greatly aggravate, at least eventually, meeting the marketing challenge.

Similarly, taking on more of the marketing challenge than can be successfully met would seem to result in the college having to meet, without more advance notice than the projections urged above can provide, an instructional challenge more formidable than anticipated. This would apparently leave the college where it would have been had it planned on this contingency, but with less time to prepare for it.

This suggests that colleges planning to arrest or reverse projected score declines ought to calculate carefully what doing so would imply in terms of their yield from among the potential applicants that they share with other colleges. The best source of such data is again the ATP Summary Reports, in this case the reports on college-bound seniors, which in addition to being produced for some high schools and school districts or systems are also produced for various geographical areas.

Colleges planning to reverse score declines ought also to estimate the costs, in terms of other student characteristics, of doing so successfully. These "costs" might include, for example, a larger than desired fraction of the class with a relentless interest in pre-medical or pre-law majors, fewer disadvantaged students, etc. Perhaps the best way to judge these effects is to choose (at random) from among the currently enrolled freshmen a subgroup with a score distribution similar to that desired and to ask for an ATP Summary Report on that subgroup. The report will include in its SAT tables the score distribution specified and, in its other tables, some suggestion as to the side effects of achieving such a score distribution.

Planning to arrest or reverse a projected score decline may not, however, be the most prudent course for a college to take. No college can be certain that adjustments which it can make will necessarily reduce a score decline which it has been experiencing and is projected to continue to experience. Any college, on the other hand, can plan successfully, if perhaps not cheerfully, to educate a less able class. So it would seem that the most prudent course may be to plan to accept the maximum instructional challenge that trend analyses suggest may have to be met and to plan to meet only as much of the marketing challenge as seems clearly to be feasible.